

NOMAPHILA STRICTA (ACANTHACEAE), A NEWLY DISCERNED AQUATIC WEED IN TEXAS, AND THE FIRST REPORT FOR NORTH AMERICA

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ABSTRACT

An aquatic weed, *Nomaphila stricta*, new to North America, was discovered in San Felipe Springs, east of Del Rio, Texas, 0.2 mi., Val Verde Co., Texas, where it was well-established and vigorously reproducing by subsurface stolons. The species was apparently recently introduced from the paleotropics and should be carefully monitored by ecologists interested in aquatic ecosystems in the southwestern U.S.A. and adjacent Mexico.

KEYWORDS: *Nomaphila*, *Hygrophila*, Acanthaceae, aquatic weeds, Texas.

In September of 1991, the junior author, while collecting an aquatic member of the family Asteraceae (*Trichocoronis rivularis* A. Gray), observed and collected an aquatic plant new to him. Indeed, upon further investigation, he was unable to position the species in any North American manual purporting to account for the aquatics of this region (e.g., Correll & Correll 1972; Godfrey & Wooten 1979; etc.). The plant was first thought to be, possibly, an undescribed species of the aquatic genus *Hygrophila* (Acanthaceae), but the peculiar bilabiate corolla, palatte lower inner petals, and the exserted, much branched (albeit axillary) inflorescence precluded any close relationship with the North American species of that genus.

Since the plant concerned was abundant and occurred in San Felipe Springs, a well known collecting site visited by numerous botanists (beginning in 1849 with the visit of Charles Wright), it seemed unlikely that the species would not have been collected by yet other workers. Thus, we felt that the species might prove to be an exotic introduction.

The senior author's experience with paleotropical members of the Acanthaceae

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directed him to the genus *Nomaphila*, a segregate from the world wide weedy genus *Hygrophila*. Subsequent research showed the species to be *Nomaphila stricta* (Vahl) Nees, a well known aquatic weed of Malaysia (Backer 1965).

The introduction of this aquatic weed into San Felipe Springs was probably accidental. We surmise that it was dumped into the stream, unintentionally, by someone intent on releasing minnows or "gold fish" into the streams concerned. The proximity of the springs to Lackland United States Air Force Base, Del Rio, Texas, which is home to numerous well travelled service men, often accompanied by their Asian wives, makes this a possibility. Regardless, the plant, which emerges from the water for 30 – 80 cm, always along the stream banks, is well-established on both sides of the stream leading from San Felipe Springs. Since the several colonies occur along the banks of San Felipe Springs which soon empties into the Rio Grande River, it is possible that the species might become an obnoxious weed in southern Texas and Mexico. Aquatic ecologists should monitor closely the spread of this taxon; perhaps removal at the present time might seem expedient, since it does appear to compete, in part, with the localized, probably threatened, aquatic species, *Trichocoronis rivularis*.

A brief account on the taxonomy, nomenclature, and a description of the species follows:

Nomaphila stricta (Vahl) Nees in Candolle, Prodr. 11:84. 1844. Based on *Justicia stricta* Vahl, Symb. Bot. II. 6. 1791.

Hygrophila stricta (Nees) Lindau in Engler & Prantl, Naturl. Pflanzenf. IV. 3b. 297. 1895. non *Hygrophila stricta* Hassk., Cat. Bot. Bogor. 148. 1844.

Stoloniferous or rhizomatous aquatic herbs to about 1 m tall. Stems 4-angled, glandular-villous, the nodes thickened. Petioles 2 – 6 cm long; leaf-blades elliptic oblong, 6 – 15 cm long, 2 – 7 cm wide, acuminate above, obtuse below, with about 16 pairs of parallel secondary veins, entire to subcrenate. Inflorescence axillary, cymose, the branches glandular-hairy. Bracteoles none. Pedicels 4 – 6 mm long. Calyx glandular-hairy, of 5 unequal linear lobes, the posterior ones longer, 7 – 10 mm long, the anterior 2 shorter, ca. 0.6 cm long. Corolla hairy, the tube whitish, ca. 5 mm long, the limb lilac, the upper lip broadly elliptic, ca. 12 mm long, 0.8 mm wide, concave and hood-like, shortly bilobed, the lower ca. 12 mm long, ca. 8 mm wide, broadly elliptic, palate, 3-lobed, the lobes of equal length, the laterals slightly wider than the obliquely plicate, velutinous middle lobe. Stamens 4, included, conspicuously didynamous, the filaments glabrous, the longer ones ca. 6 mm long, the shorter ca. 2 mm long, anther two-celled, ca. 1.5 mm long. Ovary densely glandular-hairy, 2-celled, multiovulate, the style ca. 12 mm long, pubescent, the anterior stigmatic lobe longer.

Nomaphila (*Acanthaceae-Contortae-Hygrophileae*) is a paleotropical genus, recognized by its axillary cymose inflorescence, glandular-hairy calyx with unequal lobes and the palate, villous to velutinous, lower lip of the corolla. Various authors have often considered it to belong to *Hygrophila* (sect. *Nomaphila*) but in our view

the two differ taxonomically in significant ways. The eglandular calyx with equal lobes, and the axillary clusters (sometimes solitary) of flowers, readily distinguish *Hygrophila* from *Nomaphila*. Up until now there have been no reports of *Nomaphila* becoming naturalized in the Americas, and so its discovery here is of interest. Correspondence with some of the larger herbaria in the U.S.A. revealed only two collections of *Nomaphila*, both from indoor cultivation (Pohl s.n., US; and from an aquatic nursery in California, CAS, T. Daniel, pers. comm.). Pohl (pers. comm.) notes that "The original source [of the US collection of *N. stricta*] was undoubtedly Florida, which produces most of the aquarium plants used in the U.S. This species is widespread in the aquarium trade and sells under the name of 'water wisteria', a highly ridiculous term."

Daniel (pers. comm.), after reading our paper, noted that an almost identical situation to that of *Nomaphila* of Texas has occurred "in Florida with *Hygrophila polysperma* (Les & Wunderlin 1981), an aquarium weed that escaped." He further suggested that we check the article concerned "to make certain that the plant identified as *H. polysperma* in Florida is not the same as yours." Our examination of the paper concerned leaves no doubt that the two plants are markedly different.

Hygrophila on the other hand is represented in Texas streams by *H. lacustris* Nees. It should also be noted that if *Nomaphila* were retained in *Hygrophila* it would require a new combination or name, the name *H. stricta* (Nees) Lindau being preempted by the earlier *H. stricta* Hassls., as noted above.

Specimens examined: U.S.A. TEXAS: Val Verde Co.: San Felipe Springs, growing in water along E bank ca. 40 m N of the bridge on hwy 90, 13 Sep 1991, B. Turner 16020 (TEX); same locality, 12 Oct 1991, B. Turner 16032 (GH, MO, SRSC, TEX).

OLD WORLD: MALAYSIA. Celebes: northern central part, on the coast SW of Dongala, Meijer 10133 (US); Johore, Kota Triggi, Sinclair 8425 (US). INDONESIA. Timor: Kumlol, Sauveur 83 (GH). THAILAND. Tahsaeh: Ban Nah Saun, Group 15, Maxwell 87-62 (GH).

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REFERENCES

- BACKER, C.A. 1965. Flora of Java 2:571. Noordhoff-Groningen, Netherlands.
 CORRELL, D.S. and H.B. CORRELL. 1972. Aquatic and wetland plants of southwestern United States. E.P.A., Washington, D.C.
 GODFREY, R.K. and J.W. WOOTEN. 1979. Aquatic and wetland plants of southeastern United States. University of Georgia Press, Athens, Ga.
 LES, D.H. and R.P. WUNDERLIN. 1981. *Hygrophila polysperma* (Acanthaceae) in Florida. Florida Sci. 44:189 – 192